

## Pseudo-code for EEG feature selection algorithm

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 $F_{in} = 1:70$  (Initial pool of features in GLM)
 $F_{out} = \text{empty}$  (Initial empty set of rejected features)

for k = 1:1000 iterations
    if k < 50 (Initial Feature Removal Iteration)
        for P = 1:16 (Step through each participant)

            Systematic iteration across all features
            for i = 1:Number of features in  $F_{in}$ 
                Select features included in  $F_{in}$ 
                Remove feature i
                Compute GLM
                Save RMSE ( $R(P, i) = \text{RMSE}$ )
            end
        end

        Find removed feature which creates minimum RMSE change
        ifeat = min(max(R))

        Move ifeat feature from  $F_{in}$  to  $F_{out}$ 

    else (Secondary Iteration – Feature Swap)
        for P = 1:16 (Step through all participants)
            Select features in  $F_{in}$  and compute a GLM
            Save current RMSE value  $R_c$ 

            Systematically loop through combinations of features
            (replacing each  $F_{in}$  features with the  $F_{out}$  features)
            for in = 1:20 (number of features in  $F_{in}$ )
                for out = 1:50 (number of features in  $F_{out}$ )
                    Swap in feature for out feature
                    Compute GLM
                    Save RMSE ( $R(P, in, out) = \text{RMSE}$ )
                end
            end
        end

        Find feature swap that produces a smaller mean RMSE
        value than the current mean  $R_c$  or stop the algorithm
        Find index (ifeat) and value of the minimum
        of the mean R across P: min(mean(R))

        if the new minimum value is > mean( $R_c$ )
            Stop:  $F_{in}$  is the final feature selection
        else
            Swap identified features (ifeat) between
             $F_{in}$  and  $F_{out}$ 
        end
    end
end
end
```